Testing of the Individual Nutrition Rx Assessment Process among Nursing Home Residents

Neva L. Crogan, PhD, APRN, BC, FNGNA [Assistant Professor] and
University of Arizona College of Nursing, P.O. Box 210203, Tucson, AZ 85721-0203, 520-626-3770,ncrogan @nursing.arizona.edu

Ceanne Alvine, RN, MBA, 2003-2005 John A. Hartford Scholar [Doctoral Candidate]
University of Arizona College of Nursing, Tucson, AZ 85721-0203,Ceanne @nursing.arizona.edu

Abstract

The purpose of this article is to describe the Individual Nutrition Rx (INRx) assessment process and report preliminary findings on baseline nutritional status, common nutrition problems and specific individualized interventions. The INRx utilizes a predictive model for participant identification, a systematic assessment process, and evidence-based interventions to improve nutritional status of at-risk residents. Nineteen percent of participants had abnormal serum albumin levels and 32.8% had abnormal serum prealbumin levels indicating diminished protein stores and protein calorie malnutrition. Frequent nutritional problems identified through the INRx assessment process were appetite change, poor positioning while eating and oral status concerns.

Introduction

The number of individuals aged 65 and older in the United States is growing dramatically and is expected to increase 126% by 2011 (Seiler, 2001). Despite efforts to remain independent, many older adults are admitted to nursing homes each year. Of these, up to 85% suffer from malnutrition (Rowe & Kahn, 1998). The causes of malnutrition are multidimensional but may include dental caries, impaired chewing capacity, impaired ability to eat certain foods, and poor dental care/treatment (Isaksson, Soderfeldt, & Nederfors 2003; Wyatt, 2002; Nordenram, Ljunggren, & Cederholm, 2001; Sheiham & Steele, 2001; Sheiham, Steele, Marcenes, Finch, & Walls, 1999). The purpose of this article is to describe the Individual Nutrition Rx (INRx) assessment process and report preliminary findings on baseline nutritional status, common nutrition problems identified by the INRx protocol and specific individualized interventions.

Background

The Problem

Federal law requires that nursing home residents have a comprehensive assessment completed within 14 calendar days of admission (American Health Care Association, 1999). Typically nursing homes use the Minimum Data Set (MDS) to satisfy this requirement. However, there are several limitations to this process. Residents are not always accurately assessed using the MDS, nor does their comprehensive plan of care identify all actual or potential problems (Sidenvall & Ek, 1993). The entire assessment may not be accurate. The nutrition status section may or may not be completed by a Registered Dietitian, but rather may be scored by an unskilled

dietary worker or a Registered Nurse who may not have adequate education or knowledge on how to complete the MDS. Also, Registered Dietitian's who complete the MDS may only be employed part time by the nursing home, thus unable to ensure a timely assessment of all residents. The end result is often a delayed or inaccurate nutrition assessment.

In addition, the MDS care planning process may not be adequate. The MDS assessment of nutrition status reflects only what occurred during the assessment period (past 7 days) and does not predict future problems. The MDS provides the framework for a minimal nutritional assessment (using minimal criteria) but fails to provide recommendations or guidelines for management or treatment. Hence, potential nutrition problems are not identified or included on the plan of care.

Individual Nutrition Rx (INRx) Protocol

The INRx nutritional protocol goes beyond the basic, required nutritional assessment in several ways. The INRx addresses nutritional problems by (1) increasing the criteria used by nurses for assessment; (2) increasing the array of interventions available to nursing staff in planning; (3) providing education to staff about how to implement interventions; (4) systematizing evaluation of responses to evaluation; and (5) systemically establishing a feedback loop between evaluation and planning. The goal is to develop a more complete and accurate comprehensive assessment of resident needs leading to improved nutritional status, enhanced quality of life, decreased morbidity, and less healthcare utilization.

Assessment Process

An extensive, weekly RN assessment process and chart review by a licensed dietician and registered pharmacist was used to identify nutritional problems in the intervention group. The interdisciplinary research team, consisting of an experienced long-term care Registered Nurse, a doctorally prepared nurse researcher, a long-term care consulting pharmacist, a Registered Dietitian, and a doctoral student in nutrition met weekly to review assessment findings for intervention group residents. Research-based interventions were collaboratively determined and relayed to nursing home staff for implementation. Recommendations included diet changes and referrals-to nursing for supportive programs, to the physician for medication changes, and to specialized rehabilitation for position and adaptive equipment (see Table 1).

Methodology

Research design

This study used a two-group prospective quasi-experimental design with measures taken at baseline and then at 6 months. Participants in the intervention group received the 6-month INRx protocol. Participants in the comparison group received care routine to their nursing home.

Sample and Setting

Residents (N=80) from two 250-bed for profit southwest nursing homes who were at least 65 years of age, with one or more risk factor for malnutrition, who lived within the nursing home at least 3 weeks, who exhibited normal to moderately impaired cognitive abilities (measured by Mini Mental State Examination [MMSE] > 11), and who did not have an end-stage terminal diagnosis (renal disease, cancer, primary diagnosis of COPD) were invited to participate in the study. Of the 80 residents, 75% (60) were women, 25% (20) were men. The average age of residents was 81.13 years (SD 8.62), ranging from 65 to 98 years of age.

Results

Nutritional Status of Participants

Nutritional status for both the intervention and comparison groups was measured at baseline using BMI, and serum albumin and prealbumin. According to the Nutrition Screening Initiative, undernutrition is classified as a BMI <22 for older adults (Nutrition Screening Initiative). Participant BMI ranged from 17.09 to a high of 43.98. Of those, 23% were underweight, 18% had normal weight, and 59% were either overweight or obese.

Baseline protein stores were measured using serum albumin and prealbumin. Serum albumin ranged from a low of 3.0 to a high of 4.50 in both groups. Normal serum albumin range is 3.5–5.2 g/dL (Sonora Quest Laboratories). Nineteen percent of participants had abnormal serum albumin levels indicating diminished protein stores and protein calorie malnutrition (PCM). Serum prealbumin ranged from a low of 11 to a high of 50. Normal serum prealbumin range is 20–40 mg/dL (Sonora Quest Laboratories). Almost one third (32.8%) of participants had abnormal serum prealbumin levels indicating diminished protein stores and PCM.

Common Nutritional Problems

The most frequent nutritional problems identified through the INRx protocol were appetite change (due to chronic pain, depression or weight loss); poor positioning while eating (i.e., table too high, wheelchair uncomfortable, wheelchair legs up, resident always reclined); and oral status (due to sore gums/mouth pain, difficulty swallowing, difficulty chewing, and poor fitting dentures). In fact, 25% of all intervention group residents had one or more of these modifiable problems. Other problems identified included difficulty feeding self (due to poor hand/mouth coordination, poor vision, or unable to reach items on tray); poor nutritional status (abnormal serum potassium, albumin or prealbumin levels); environment not conducive to eating (noisy dining room, non-supportive dining room staff); and personal preferences not honored.

Specific Individualized Interventions

Intervention most commonly identified included proper poisoning while eating, the use of antidepressant medications, and the repair of dentures (Table 1). Those recommended more than once are in bold.

Discussion

In this study, ten residents (23%) had a BMI <22, indicating malnutrition. This percentage was lower than the prevalence of malnutrition in nursing homes reported in other studies (Rowe & Kahn, 1998; Frisoni, et al., 1994). Serum prealbumin was the most sensitive measure of nutritional status (32.8% of participants had values <20 mg/dL), followed by BMI (23% of participants <22) and serum albumin (19% of participants had values <3.5 g/dL). Serum prealbumin has been previously reported as the most sensitive measure of protein-calorie malnutrition (PCM) available (Moore, 2001).

The most frequent nutritional problems identified through the INRx assessment process were appetite change, poor positioning while eating, and oral status. These problems are not new to older adults residing in nursing homes. Issues such as positioning and dentition have a direct impact on food intake and may influence nutritional status. Addressing problems through an interdisciplinary focused approach may reduce their impact on resident's overall health status and lead to improved quality of life.

Interventions identified during the INRx process support the premise that interdisciplinary teams are capable of assessing complex nutritional problems and recommend appropriate interventions. The majority of recommendations implemented during this study were initiated by the interdisciplinary team. Specifically, the team recommended 82 interventions. Eleven interventions needed a physician's order, demonstrating that many interventions aimed at improving nutritional status can potentially be achieved through collaboration of the facility's interdisciplinary team.

Future directions

At the conclusion of this research study the INRx protocol will have been tested to determine whether it improves resident outcomes in the areas of nutritional status, quality of life, morbidity, and health care utilization. The overall analysis will include baseline and post-intervention assessments to assess functional status, depression and quality of life. Chart review will determine if there are morbidity differences between the intervention and comparison groups, measured by quantifying utilization of healthcare services (hospitalizations and ER visits). Further studies will assess the full implementation of the INRx protocol. For example, choice in resident dining location will be assessed to address environmental concerns brought forward by residents in this and other studies. Organizational factors such as organizational culture, supervision in the dining room, and environmental noise may also be evaluated for their impact on nutritional status and other study outcomes. Successes demonstrated with the INRx protocol should be incorporated into evidence-based nursing practice and interdisciplinary approaches within the nursing homes.

References

American Health Care Association (1998). Facts and trends, the nursing facility sourcebook. Washington, DC: American Health Care Association.

Frisoni G, Franzoni S, Rozzini R, Ferrucci L, Boffelli S, Trabucchi M. A nutritional index predicting mortality in the nursing home. Journal of the American Geriatric Society 1994;42:1167–1172.

Isaksson R, Soderfeldt B, Nederfors T. Oral treatment need and oral treatment intention in a population enrolled in long-term care in nursing homes and home care. Acta Odontol Sand 2003;61(1):11–8.

Moore, M.C. (2001). Nutritional care. St. Louis: Mosby, Inc.

Nordenram G, Ljunggren G, Cederholm T. Nutritional status and chewing capacity in nursing home residents. Ageing 2001;13(5):370–7.

Nutrition Screening Initiative, accessed 03/08/05 at www.eatright.org/Public/Files/nsifinal.pdf

Rowe, J., & Kahn, R. (1998). Successful aging. New York: Pantheon Books.

Seiler W. Clinical pictures of malnutrition in ill elderly subjects. Nutrition 2001;17:496–498. [PubMed: 11517898]

Sheiham A, Steele J. Does the condition of the mouth and teeth affect the ability to eat certain foods, nutrient and dietary intake and nutritional status amongst older people? Public Health Nutrition 2001;4 (3):797–803. [PubMed: 11415487]

Sheiham A, Steele J, Marcenes W, Finch S, Walls AW. The impact of oral health on stated ability to eat certain foods; findings from the National Diet and Nutrition Survey of Older People in Great Britain. Gerodontology 1999;16(1):11–20. [PubMed: 10687504]

Sidenvall B, Ek A. Long-term care patients and their dietary intake related to eating ability and nutritional needs: Nursing staff interventions. Journal of Advanced Nursing 1993;18:565–573. [PubMed: 8496504]

Sonora Quest Laboratories, Tucson, Arizona. Reference Ranges for specific laboratory tests provided via fax. 03/03/05.

Wyatt CC. Elderly Canadians residing in long-term care hospitals Part II. Dental caries status. Journal of the Canadian Dental Association 2002;68(6):359–63. [PubMed: 12034072]

Table 1

Categories of interventions initiated during INRx protocol

Category	No. of times
Diet Change	30
Examples: High density diet	
Mechanical soft diet	
Eliminate Na restriction	
High protein drink if eats <50%	
Nursing Referral	17
Examples: **Small group dining**	
Proper positioning	
Physician Referral	11
Example: **Antidepressant medication**	
Physical Therapy Referral	6
Example: Cushion in chair	
Occupational Therapy Referral	4
Example: Adaptive equipment	
Speech Therapy Referral	4
Example: Swallowing evaluation	
Social Services Referral	10
Examples: **Dental repair**	
Dental appointment	

Note: Most common interventions in bold.